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PRE-OPERATIONAL REPORT
PRODUCTION TEST FACILITY
FLORENCE, ARIZONA

by Haley & Aldrich, Inc.
Phoenix, Arizona

for Florence Copper Inc.
Florence, Arizona

File No. 129687
September 2018

Executive Summary

Florence Copper, Inc. (Florence Copper) has constructed the Production Test Facility (PTF) to demonstrate In-Situ Copper Recovery at the Florence Copper Project site in Florence, Arizona. This PTF Pre-Operational Report summarizes the details of the pre-operational requirements required under the site permits including the United States Environmental Protection Agency (USEPA) Underground Injection Control Permit No. R9-AZ3-FY11-1 (UIC Permit) and the Arizona Department of Environmental Quality (ADEQ) Temporary Aquifer Protection Permit (APP) No. 106360.

Formation testing completed at the site conformed to requirements of both the UIC Permit and the APP. Results of the testing and the porosity data supported the parameters used in the site model.

Wells and coreholes existing within the Area of Review (AOR) of the PTF were abandoned as required in the UIC Permit and APP. All wells and coreholes were sealed using more than the calculated volume and were perforated across lithologic intervals as required in the permits.

Once construction and equipping of the PTF was complete, a demonstration of the hydraulic capture and cone of depression was completed by injecting and recovering clean water. Hydraulic capture was demonstrated by the drawdown at each PTF recovery well exceeding the drawdown at its adjacent PTF observation well by more than 1 foot. To demonstrate the cone of depression, water level elevations were observed at the edge of the APP Pollutant Management Area (PMA) at monitoring well M54-O, a distance of approximately 500 feet from the wellfield during the recovery and injection period. The water level elevation at downgradient monitoring well M54-O was higher than the elevation at both downgradient observation wells.

Ambient mine block water quality data was collected form all PTF mine block wells and initial discharge characterization was completed at the underground workings at the site; results are summarized in this report.

Bulk electrical conductivity sensors were installed on all PTF observation wells and background electrical conductivity data was collected at the site. Statistical analysis of the data was completed and alert levels for the electrical conductivity sensors are proposed to monitor for excursion of mining solutions into the Lower Basin Fill Unit.

All PTF wellfield wells and monitoring wells associated with the PTF that were completed within the AOR were completed in accordance with the Class III well requirements. Wells located outside the AOR were completed as designed. Class III wells were drilled, constructed, and tested in accordance with the construction procedures included in the UIC Permit. The only deviations from the well design were:

- PTF Observation Well O-05. During grouting of the well, the contractor lost power to the rig and grout pump and was unable to install the grout in one continuous lift. After installation, the cement interval was evaluated and deemed to be insufficient. The well was abandoned by perforating across the compromised grout zone and replaced approximately 20 feet away. The replacement well O-05B was built in accordance with the construction procedures included in the UIC Permit.
- PTF Injection Well I-03. During development, a pipe separated and compromised the endcap of the well. No other damage was identified, but a sand-filled rubber plug was installed to approximately 1,130 feet.

- Recovery Well R-06. Grout intruded into the screened zone during installation of the grout seal. The mechanical integrity of the well was evaluated to ensure the grout lost into the well did not compromise the seal; the integrity was confirmed by both Standard Annular Pressure Testing and geophysical logging inspections. During efforts to remove the grout from the well, the screen was compromised. In order to ensure the stability of the well, the well was equipped with a 3-inch liner from 570 feet to the total depth that could be achieved after the cleanout (1,090 feet).

All PTF wellfield wells passed standard annular pressure tests to evaluate the mechanical integrity of the wells. Further details are provided in Appendices E through J.

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1. Introduction

This report has been prepared in accordance with Pre-Operational requirements set forth in Section 2.7.4.3 of Aquifer Protection Permit (APP) No. P-106360 (APP) and to transmit Production Test Facility (PTF) wellfield completion data to the United States Environmental Protection Agency (USEPA) in accordance with requirements of Part II of the Underground Injection Control Permit No. R9UIC-AZ3-FY11-1 (UIC Permit).

2. Aquifer Testing

Aquifer testing and injection testing was completed in accordance with Section 2.2.3 of the APP, as well as Part II.C.8 of the UIC Permit. The results of the testing are summarized in the Formation Testing Report, Production Test Facility. The report is provided as Appendix A of this report for reference but was previously submitted to both the Arizona Department of Environmental Quality (ADEQ) and the USEPA. Data and analysis generated during aquifer testing were compared to those included in the groundwater model that was prepared in support of the permit applications. Aquifer testing and geophysical logging produced site-specific hydraulic conductivity and porosity values. The groundwater flow model was created using values derived from testing on the Florence Copper property, but at locations other than the PTF well field. This testing showed that the hydraulic conductivity and porosity values used in the groundwater flow model are representative of site-specific values measured at the PTF site. Consequently, no changes to the existing groundwater model are necessary at this time based on results of the formation testing.

2.1 NEUTRON POROSITY EVALUATION

Neutron logging was conducted in the boreholes for wells R-01, I-01, I-02, I-03, and I-04 in the PTF wellfield in accordance with Part II.C.2 of the UIC Permit. Porosity values were calculated from the neutron-density data by the geophysical contractor that conducted the testing (Southwest Exploration LLC). The porosity values calculated from the compensated neutron-density data and the porosity values used in the groundwater flow model are shown in Table 1.

The porosity values applied in the groundwater flow model are comparable to the average of the measured porosity values using neutron logging. The porosity values applied in the model for the bedrock oxide unit model layers range from 5 to 8 percent and are representative of the oxide unit porosity values calculated from neutron data.

The calculated porosity values for the bedrock oxide unit are very close to those used in the model based on data collected at other locations on the project site in the 1990s. The porosity values calculated for the alluvial units however were slightly lower but still representative of values determined by previous site-wide testing. This variation between the calculated neutron porosity and the value used in the model is the result of conditions under which the data was collected. The neutron-density logging tool is designed to be operated in a borehole with a nominal diameter of 8 to 10 inches. However, the upper portion of the boreholes logged for neutron-density are 20 inches in diameter. Operating the tool outside of the design parameters likely dissipated a portion of the signal which could cause the values to be lower than actual values in the formation. The lower portion of the boreholes logged (below 500 feet) that is the majority of the bedrock interval is 12¼-inch in diameter, which is

closer to the conditions in which the tool is designed to operate. The resulting calculated porosity values align very closely with those used in the model.

During aquifer testing, a spinner-flowmeter survey was run in well R-01. The correlation between the calculated flow contribution from various depth intervals under pumping conditions and the vertical porosity profile measured by neutron logging was evaluated to establish the relationship between porosity and observed flow. As shown in Figure 1, the depth intervals that contribute a larger percentage of the groundwater flow to the well under the pumping conditions do not necessarily coincide with the higher porosity intervals. This indicates that the vertical porosity profile calculated for the formation from compensated neutron-density data is not likely to be a useful tool to identify intervals that are relatively more permeable in the bedrock oxide unit at the site.

3. Well Abandonment

The PTF Well and Corehole Abandonment Report prepared by Haley & Aldrich and dated 13 September 2018 is provided as Appendix B.

4. Inward Hydraulic Gradient Demonstration

Florence Copper operated the PTF wellfield from 27 to 31 August 2018 to establish a cone of depression under injection conditions to demonstrate hydraulic control could be established at the PTF. Injection was conducted with clean formation water; no lixiviant or additives were included in the injected water. The recovery wells were turned on at 10:30 AM on 27 August 2018 and extraction rates were adjusted. Injection commenced at the injection wells at 11:55 AM on 27 August 2018. The water extracted from the recovery wells was pumped to the process area through the pipeline and back to the wellfield using the constructed facilities. Flow rates were adjusted during the first day of the test. After the first 24 hours, the wellfield was extracting at rates ranging from 264 to 268 gallons per minute (gpm), and injecting at rates ranging from 181 to 223 gpm.

A contour map was generated using data collected during the afternoon of 30 August 2018, approximately 3 days after pumping and injection commenced. The contours reflect a period when the extraction rate was 267 gpm and the injection rate averaged 209 gpm. The over-pumping equates to 127 percent of the injection rate; a contour map is provided in Figure 2.

The contour map shows that a cone of depression was established around the PTF, with groundwater flowing into the wellfield from all directions. In addition, the water levels at each of the observation wells met the minimum 1-foot differential requirement. A summary of water levels and differential for each recovery/observation well pair is included as Table 2.

4.1 ESTABLISHMENT OF THE CONE OF DEPRESSION

Section 2.2.2.f of the APP requires the demonstration of a cone of a depression by confirmation of a higher water level elevation at the edge of the Pollutant Management Area (PMA), as defined by the APP, than at the downgradient PTF observation well. Table 3 summarizes water level elevations at the two PTF observation wells and downgradient monitoring wells in the bedrock oxide unit out to well M54-O located outside of the PMA. During the hydraulic connection test, water level elevations were

collected at downgradient monitoring wells MW-01-O and M54-O. Both demonstrated higher water level elevations than the PTF observation wells located on the downgradient side of the wellfield, wells O-07 and O-06. The water levels at these wells are summarized in Table 4.

5. Ambient Mine Block Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings

Results of the ambient groundwater characterization of the PTF mine block and the results of the initial discharge characterization of the underground workings are included in the memorandum titled *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings*, prepared by Brown and Caldwell and provided as Appendix C to this report.

6. Ambient LBFU Bulk Electrical Conductivity Results

The results of the Ambient Bulk Electrical Conductivity ambient monitoring and proposed alert levels are included in the report titled *Procedures for Determining Bulk Electrical Conductivity Levels, Production Test Facility* prepared by Haley & Aldrich. This report is provided as Appendix D of this report, and was previously submitted to both the ADEQ and the USEPA.

7. Well Installation Details for All PTF Wellfield and Monitoring Wells

Technical Memorandums summarizing the drilling and installation for each of the PTF wellfield and monitoring wells are included in the following appendices:

- Appendix E, Point-of-Compliance Wells;
- Appendix F, PTF Supplemental Monitoring Wells;
- Appendix G, PTF Operational Monitoring Wells;
- Appendix H, PTF Injection and Recovery Wells;
- Appendix I, PTF Westbay Wells; and
- Appendix J, PTF Observation Wells.

The Technical Memorandums for all Class III wells include USEPA form 7520-9 and supporting documentation including results of the demonstration for mechanical integrity.

8. Closing

This report conforms to requirements describing a PTF Pre-Operational Report set forth in Section 2.7.3 of the APP. The content also conforms to requirements of the UIC Permit set forth in Part II.C.1(b), Part II.C.3, Part II.C.9(a), Part II.C.9(b), and Part II.G.4.

TABLES

TABLE 1
COMPARISON BETWEEN MODELED POROSITY AND
AVERAGE POROSITY MEASURED BY NEUTRON LOGGING
FLORENCE COPPER INC.
FLORENCE, ARIZONA

Model Layer or Unit	Range of Modeled Porosity Values	Average Porosity Measured by Neutron Logging (I-01, I-02, I-03, I-04, and R-01)
Model Layers 1 and 2 (UBFU)	0.13 - 0.2	0.12
Model Layer 3 (MFGU/UBFU)	0.15 - 0.2	0.12
Model Layer 4 and 5 (LBFU)	0.2	0.12
Model Layers 6-10 (Bedrock Oxide)	0.08 for Model Layers 6-8 0.05 for Model Layers 9-10	0.08
Notes: *LBFU = Lower Basin Fill Unit* *MFGU = Middle Fine-Grained Unit* *UBFU = Upper Basin Fill Unit*		

TABLE 2
RECOVERY AND OBSERVATION WELL
PAIRS WATER LEVEL DIFFERENTIAL
FLORENCE COPPER INC.
FLORENCE, ARIZONA

Outer Recovery Well ID	Date/Time	Water Level Elevation (feet amsl)	Paired Observation Well ID	Date/Time	Water Level Elevation (feet amsl)	Water Level Differential (feet)
R-01	8/30/2018 15:58	1231.68	O-07	8/30/2018 16:49	1235.98	4.3
R-01	8/30/2018 15:58	1231.68	O-01	8/30/2018 15:36	1235.35	3.67
R-02	8/30/2018 16:06	1229.22	O-01	8/30/2018 15:36	1235.35	6.13
R-02	8/30/2018 16:06	1229.22	O-02	8/30/2018 16:03	1235.06	5.84
R-03	8/30/2018 16:12	1223.10	O-02	8/30/2018 16:03	1235.06	11.96
R-03	8/30/2018 16:12	1223.10	O-03	8/30/2018 16:12	1233.45	10.35
R-04	8/30/2018 16:19	1226.13	O-03	8/30/2018 16:12	1233.45	7.32
R-05	8/30/2018 16:25	1224.05	O-04	8/30/2018 16:25	1235.57	11.52
R-06	8/30/2018 16:32	1225.72	O-04	8/30/2018 16:25	1235.57	9.85
R-06	8/30/2018 16:32	1225.72	O-05	8/30/2018 16:37	1235.27	9.55
R-07	8/30/2018 16:43	1233.41	O-05	8/30/2018 16:37	1235.27	1.86
R-07	8/30/2018 16:43	1233.41	O-06	8/30/2018 16:44	1235.58	2.17
R-08	8/30/2018 16:49	1232.32	O-06	8/30/2018 16:44	1235.58	3.26
R-08	8/30/2018 16:49	1232.32	O-07	8/30/2018 16:49	1235.98	3.66

Note:

amsl - above mean sea level

TABLE 3
PTF WELL COMPLETION SUMMARY
FLORENCE COPPER INC.
FLORENCE, ARIZONA

Well ID	Well Registry ID	Well Drilling and Construction Timeline		Well Development Completion Date	Well Type	Cadastral Location	Survey Data (State Plane)				Borehole Depth (ft bgs)	Well Depth (ft bgs)	Top Cement Interval (ft bgs)	Bottom Cement Interval (ft bgs)	Top Bentonite & Sand Seal Interval (Intermediate Sand Seal Intervals for Recovery, Injection, Westbay Wells) (ft bgs)	Bottom Bentonite & Sand Seal Interval (Intermediate Sand Seal Intervals for Recovery, Injection, Westbay Wells) (ft bgs)	Top Filter Pack Interval (ft bgs)	Bottom Filter Pack Interval (ft bgs)	Top Screened Interval (ft bgs)	Bottom Screened Interval (ft bgs)	Casing Type	Casing Diameter		Screen Type	Screen Slot Size (in.)	Screen Diameter		Unit Contacts		
		Start	End				Northing (NAD83)	Easting (NAD83)	Ground Surface Elevation (NAVD88)	Measuring Point Elevation/Top of Casing Elevation for POC & Monitoring Wells (NAVD88)												Outside (in.)	Inside (in.)			Outside (in.)	Inside (in.)	Unit	Bottom of Unit Depth (ft bgs)	Bottom of Unit Elevation (ft-amsl)
POINT OF COMPLIANCE WELLS																													
M52-UBF	55-226788	1/26/2017	1/27/2017	2/14/2017	Point-of-Compliance	D (4-9) 28 DAA	774178.00	851092.00	1,483.43	1,485.04	280	274	0	187	187	197	197	280	198	274	Schedule 80 PVC	5.56	4.81	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	---	---
M54-LBF	55-226792	2/8/2017	2/12/2017	2/15/2017	Point-of-Compliance	D (4-9) 28 CBA	746682.61	847331.96	1,480.18	1,481.92	640	629	0	285	285	300	300	640	310	629	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	287	1,193
																												Middle Fine-Grained Unit	300	1,180
																												Lower Basin Fill Unit	---	---
M54-O	55-226798	1/29/2017	2/6/2017	5/15/2017	Point-of-Compliance	D (4-9) 28 CBD	746702.36	847342.99	1,480.20	1,482.42	1,210	1,199	0	649	649	659	659	1,210	668	1,199	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	286	1,194
																												Middle Fine-Grained Unit	300	1,180
																												Lower Basin Fill Unit	740	740
																												Bedrock Oxide Unit	---	---
OPERATIONAL MONITORING WELLS																													
MW-01-LBF	55-226789	11/21/2017	12/19/2017	12/29/2017	Operational Monitoring	D (4-9) 28 CBD	746360.54	847487.97	---	1,478.99	444	440	0	310	310	320	320	444	330	440	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	280	1,199
																												Middle Fine-Grained Unit	299	1,180
																												Lower Basin Fill Unit	---	---
MW-01-O	55-226793	11/20/2017	12/14/2017	12/27/2017	Operational Monitoring	D (4-9) 28 CBD	746369.31	847499.04	---	1,479.14	1,210	1,200	0	480	480	490	490	1,210	500	1,200	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	281	1,198
																												Middle Fine-Grained Unit	297	1,182
																												Lower Basin Fill Unit	445	1,034
																												Bedrock Oxide Unit	---	---
SUPPLEMENTAL MONITORING WELLS																													
M55-UBF	55-226797	4/10/2017	4/12/2017	5/2/2017	Class III Supplemental Monitoring	D (4-9) 28 CBD	746280.63	847541.46	1,478.00	1,479.14	272	261	0	216	216	230	230	272	240	261	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	---	---
M56-LBF	55-226795	4/13/2017	4/14/2017	5/1/2017	Class III Supplemental Monitoring	D (4-9) 28 CBD	746303.41	847518.70	1,477.32	1,478.65	352	340	0	297	297	310	310	352	320	340	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	282	1,195
																												Middle Fine-Grained Unit	302	1,175
																												Lower Basin Fill Unit	---	---
M57-O	55-226790	3/3/2017	3/10/2017	4/3/2017	Class III Supplemental Monitoring	D (4-9) 28 CBD	746248.93	847378.37	1,476.77	1,478.71	1,210	1,200	0	504	504	515	515	1,210	523	1,200	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	283	1,194
																												Middle Fine-Grained Unit	302	1,175
																												Lower Basin Fill Unit	545	932
																												Bedrock Oxide Unit	---	---
M58-O	55-226794	3/11/2017	3/19/2017	4/17/2017	Class III Supplemental Monitoring	D (4-9) 28 CBD	746595.97	847672.23	1,479.48	1,481.08	1,213	1,200	0	563	563	584	584	1,213	594	1,200	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	285	1,194
																												Middle Fine-Grained Unit	300	1,179
																												Lower Basin Fill Unit	530	949
																												Bedrock Oxide Unit	---	---
M59-O	55-226791	3/21/2017	3/28/2017	4/10/2017	Class III Supplemental Monitoring	D (4-9) 28 CAC	746218.89	847934.95	1,478.55	1,480.19	1,213	1,200	0	512	512	524	524	1,213	534	1,200	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	285	1,194
																												Middle Fine-Grained Unit	305	1,174
																												Lower Basin Fill Unit	465	1,014
																												Bedrock Oxide Unit	---	---
M60-O	55-226796	3/30/2017	4/9/2017	4/24/2017	Class III Supplemental Monitoring	D (4-9) 28 CBD	745903.70	847599.37	1,475.46	1,477.36	1,213	1,201	0	415	415	435	435	1,213	444	1,201	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	290	1,185
																												Middle Fine-Grained Unit	310	1,165
																												Lower Basin Fill Unit	380	1,095
																												Bedrock Oxide Unit	---	---
M61-LBF	55-226799	4/15/2017	4/19/2017	5/8/2017	Class III Supplemental Monitoring	D (4-9) 28 CAC	746148.88	848184.46	1,478.91	1,480.78	646	630	0	410	410	420	420	646	429	630	Mild Steel	5.66	5.05	Schedule 80 PVC	0.020	5.56	4.81	Upper Basin Fill	282	1,197
																												Middle Fine-Grained Unit	305	1,174
																												Lower Basin Fill Unit	615	864
																												Bedrock Oxide Unit	---	---
OBSERVATION WELLS																													
O-01	55-227230	2/19/2018	3/3/2018	3/26/2018	Class III Observation	D (4-9) 28 CAC	746272.70	847765.50	---	1,481.08	1,220	1,201	0	485	485	493	493	1,220	500	1,201	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	280	1,201
																												Middle Fine-Grained Unit	300	1,181
																												Lower Basin Fill Unit	440	1,041
																												Bedrock Exclusion Zone	480	1,001
																												Bedrock Oxide Unit	---	---
O-02	55-227231	2/22/2018	3/7/2018	3/25/2018	Class III Observation	D (4-9) 28 CAC	746202.32	847836.29	---	1,479.36	1,224	1,201	0	478	478	488	488	1,224	501	1,201	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	281	1,198
																												Middle Fine-Grained Unit	300	1,179
																												Lower Basin Fill Unit	430	1,049
																												Bedrock Exclusion Zone	470	1,009
																												Bedrock Oxide Unit	---	---
O-03	55-227232	4/27/2017	5/7/2017	5/22/2017	Class III Observation	D (4-9) 28 CAC	746053.02	847831.43	---	1,478.83	1,208	1,201	0	430	430	440	440	1,208	450	1,201	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	282	1,197
																												Middle Fine-Grained Unit	302	1,177
																												Lower Basin Fill Unit	385	1,094
																												Bedrock Exclusion Zone	425	1,054
																												Bedrock Oxide Unit	---	---
O-04	55-2527233	1/4/2018	1/20/2018	3/5/2018	Class III Observation	D (4-9) 28 CBD	745988.60	847624.06	---	1,478.05	1,208	1,200	0	473	473	485	485	1,208	498	1,200	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	280	1,198
																												Middle Fine-Grained Unit	302	1,176
																												Lower Basin Fill Unit	390	1,088
																												Bedrock Exclusion Zone	430	1,048
																												Bedrock Oxide Unit	---	---
O-05B	55-227234	6/9/2017	6/19/2017	6/28/2017	Class III Observation	D (4-9) 28 CBD	746042.91	847534.95	---	1,478.57	1,220	1,201	0	429	429	439	439	1,220	450	1,201	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	282	1,197
																												Middle Fine-Grained Unit	303	1,176
																												Lower Basin Fill Unit	384	1,095
																												Bedrock Exclusion Zone	424	1,055
																												Bedrock Oxide Unit	---	---
O-06	55-227235	1/22/2018	2/9/2018	3/2/2018	Class III Observation	D (4-9) 28 CBD	746201.82	847553.01	---	1,479.16	1,220	1,201	0	474	474	490	490	1,220	499	1,201	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	278	1,201
																												Middle Fine-Grained Unit	298	1,181
																												Lower Basin Fill Unit	365	1,114
																												Bedrock Exclusion Zone	405	1,074
																												Bedrock Oxide Unit	---	---
O-07	55-227236	5/8/2017	5/20/2017	6/1/2017	Class III Observation	D (4-9) 28 CBD	746270.61	847623.88	---	1,479.13	1,210	1,198	0	428	428	437	437	1,210	446	1,198	Fiberglass Reinforced Plastic	5.47	4.74	Schedule 80 PVC	0.020	5.56	4.77	Upper Basin Fill	284	1,195
																												Middle Fine-Grained Unit	301	1,178
																												Lower Basin Fill Unit	380	1,099
																												Bedrock Exclusion Zone	420	1,059
																												Bedrock Oxide Unit	---	---

TABLE 3
PTF WELL COMPLETION SUMMARY
FLORENCE COPPER INC.
FLORENCE, ARIZONA

Well ID	Well Registry ID	Well Drilling and Construction Timeline		Well Development Completion Date	Well Type	Cadastral Location	Survey Data (State Plane)				Borehole Depth (ft bgs)	Well Depth (ft bgs)	Top Cement Interval (ft bgs)	Bottom Cement Interval (ft bgs)	Top Bentonite & Sand Seal Interval (Intermediate Sand Seal Intervals for Recovery, Injection, Westbay Wells) (ft bgs)	Bottom Bentonite & Sand Seal Interval (Intermediate Sand Seal Intervals for Recovery, Injection, Westbay Wells) (ft bgs)	Top Filter Pack Interval (ft bgs)	Bottom Filter Pack Interval (ft bgs)	Top Screened Interval (ft bgs)	Bottom Screened Interval (ft bgs)	Casing Type	Casing Diameter		Screen Type	Screen Slot Size (in.)	Screen Diameter		Unit Contacts		
		Start	End				Northing (NAD83)	Easting (NAD83)	Ground Surface Elevation (NAVD88)	Measuring Point Elevation/Top of Casing Elevation for POC & Monitoring Wells (NAVD88)												Outside (in.)	Inside (in.)			Outside (in.)	Inside (in.)	Unit	Bottom of Unit Depth (ft bgs)	Bottom of Unit Elevation (ft-amsl)
RECOVERY WELLS																														
R-01	55-227700	10/27/2017	12/18/2017	1/19/2018	Class III Recovery	D (4-9) 28 CAC	746273.07	847694.41	---	1,481.90	1,220	1,205	0	499	499	511	511	645	521	641	Fiberglass Reinforced Plastic (0 - 521)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	283	1,199
															645	658	658	888	663	883	Stainless steel (641 - 663)	5.56	5.05					Middle Fine-Grained Unit	302	1,180
															888	900	900	1,220	905	1,205	Stainless steel (883 - 905)	5.56	5.05					Lower Basin Fill Unit	414	1,068
																													Bedrock Exclusion Zone	454	1,028
																													Bedrock Oxide Unit	---	---
R-02	55-227701	1/13/2018	1/19/2018	4/3/2018	Class III Recovery	D (4-9) 28 CAC	746202.30	847765.32	---	1,481.81	1,225	1,202	0	496	496	517	517	646	521	641	Fiberglass Reinforced Plastic (0 - 521)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	283	1,199
															646	656	656	881	661	881	Schedule 80 PVC blank (641 - 661)	5.56	4.81					Middle Fine-Grained Unit	302	1,180
															881	901	901	1,225	901	1,202	Schedule 80 PVC blank (881 - 901)	5.56	4.81					Lower Basin Fill Unit	400	1,082
																													Bedrock Exclusion Zone	440	1,042
																													Bedrock Oxide Unit	---	---
R-03	55-227702	11/30/2017	1/12/2018	2/5/2018	Class III Recovery	D (4-9) 28 CAC	746131.72	847836.12	---	1,481.87	1,225	1,202	0	494	494	511	511	644	522	642	Fiberglass Reinforced Plastic (0 - 522)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	281	1,201
															644	657	657	886	662	882	Schedule 80 PVC blank (642 - 662)	5.56	4.81					Middle Fine-Grained Unit	302	1,180
															886	897	897	1,225	902	1,202	Schedule 80 PVC blank (882 - 902)	5.56	4.81					Lower Basin Fill Unit	422	1,060
																													Bedrock Exclusion Zone	462	1,020
																													Bedrock Oxide Unit	---	---
R-04	55-227703	1/15/2018	2/6/2018	3/20/2018	Class III Recovery	D (4-9) 28 CAC	746060.98	847765.04	---	1,481.84	1,225	1,201	0	488	488	500	500	645	520	640	Fiberglass Reinforced Plastic (0 - 520)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	280	1,202
															645	658	658	1,225	660	880	Schedule 80 PVC blank (640 - 660)	5.56	4.81					Middle Fine-Grained Unit	302	1,180
																			900	1,201	Schedule 80 PVC blank (880 - 900)	5.56	4.81					Lower Basin Fill Unit	375	1,107
																													Bedrock Exclusion Zone	415	1,067
																													Bedrock Oxide Unit	---	---
R-05	55-227704	1/20/2018	2/5/2018	2/26/2018	Class III Recovery	D (4-9) 28 CAC	745990.04	847694.30	---	1,480.41	1,223	1,202	0	493	493	509	509	646	521	641	Fiberglass Reinforced Plastic (0 - 521)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	279	1,201
															646	656	656	883	661	881	Schedule 80 PVC blank (641 - 661)	5.56	4.81					Middle Fine-Grained Unit	302	1,178
															883	895	895	1,223	901	1,202	Schedule 80 PVC blank (881 - 901)	5.56	4.81					Lower Basin Fill Unit	380	1,100
																													Bedrock Exclusion Zone	420	1,060
																													Bedrock Oxide Unit	---	---
R-06	55-227705	11/24/2017	3/29/2018	5/12/2018	Class III Recovery	D (4-9) 28 CBD	746060.76	847623.95	---	1,481.52	1,210	1,200	0	500	500	514	514	648	519	640	Fiberglass Reinforced Plastic (0 - 519)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	280	1,202
															648	658	658	886	660	879	Schedule 80 PVC blank (640 - 660)	5.56	4.81					Middle Fine-Grained Unit	301	1,181
															886	896	896	1,210	900	1,200	Schedule 80 PVC blank (879 - 900)	5.56	4.81					Lower Basin Fill Unit	380	1,102
																													Bedrock Exclusion Zone	420	1,062
																													Bedrock Oxide Unit	---	---
R-07	55-227706	12/27/2017	1/9/2018	1/26/2018	Class III Recovery	D (4-9) 28 CBD	746131.57	847552.95	---	1,480.51	1,244	1,204	0	505	505	518	518	648	523	643	Fiberglass Reinforced Plastic (0 - 523)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	281	1,200
															648	659	659	889	663	884	Schedule 80 PVC blank (643 - 663)	5.56	4.81					Middle Fine-Grained Unit	301	1,180
															889	896	896	1,244	904	1,204	Schedule 80 PVC blank (884 - 904)	5.56	4.81					Lower Basin Fill Unit	370	1,111
																													Bedrock Exclusion Zone	410	1,071
																													Bedrock Oxide Unit	---	---
R-08	55-227707	1/3/2018	1/18/2018	3/31/2018	Class III Recovery	D (4-9) 28 CBD	746202.32	847623.59	---	1,480.51	1,225	1,205	0	497	497	510	510	648	524	644	Fiberglass Reinforced Plastic (0 - 524)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	283	1,198
															648	658	658	886	665	885	Schedule 80 PVC blank (644 - 665)	5.56	4.81					Middle Fine-Grained Unit	302	1,179
															886	896	896	1,225	905	1,205	Schedule 80 PVC blank (885 - 905)	5.56	4.81					Lower Basin Fill Unit	365	1,116
																													Bedrock Exclusion Zone	405	1,076
																													Bedrock Oxide Unit	---	---
R-09	55-227708	3/1/2018	3/12/2018	4/23/2018	Class III Recovery	D (4-9) 28 CAC	746132.08	847694.65	---	1,481.37	1,236	1,205	0	501	501	509	509	662	520	658	Fiberglass Reinforced Plastic (0 - 520)	8.46	7.74	Schedule 80 PVC	0.080	8.63	7.63	Upper Basin Fill	283	1,198
															662	671	671	895	676	892	Stainless steel (658 - 676)	8.63	7.99					Middle Fine-Grained Unit	301	1,180
															895	906	906	1,236	911	1,205	Stainless steel (892 - 911)	8.63	7.99					Lower Basin Fill Unit	378	1,103
																													Bedrock Exclusion Zone	418	1,063
																													Bedrock Oxide Unit	---	---
INJECTION WELLS																														
I-01	55-227963	2/13/2018	3/16/2018	4/11/2018	Class III Injection	D (4-9) 28 CAC	746202.46	847694.70	---	1,482.67	1,235	1,201	0	490	490	510	510	646	521	642	Fiberglass Reinforced Plastic (0 - 521)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	283	1,200
															646	656	656	887	661	881	Stainless steel (642 - 661)	5.56	5.47					Middle Fine-Grained Unit	300	1,183
															887	897	897	1,235	901	1,201	Stainless steel (881 - 901)	5.56	5.47					Lower Basin Fill Unit	378	1,105
																													Bedrock Exclusion Zone	418	1,065
																													Bedrock Oxide Unit	---	---
I-02	55-227964	11/12/2017	2/19/2018	3/16/2018	Class III Injection	D (4-9) 28 CAC	746131.73	847765.01	---	1,482.61	1,219	1,201	0	490	490	506	506	645	520	641	Fiberglass Reinforced Plastic (0 - 520)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	280	1,203
															645	656	656	886	660	881	Stainless steel (641 - 660)	5.56	5.47					Middle Fine-Grained Unit	300	1,183
															886	896	896	1,219	900	1,201	Stainless steel (881 - 900)	5.56	5.47					Lower Basin Fill Unit	380	1,103
																													Bedrock Exclusion Zone	420	1,063
																													Bedrock Oxide Unit	---	---
I-03	55-227965	2/28/2018	3/11/2018	5/1/2018	Class III Injection	D (4-9) 28 CAC	746061.32	847694.57	---	1,480.71	1,225	1,200	0	490	490	509	509	645	521	641	Fiberglass Reinforced Plastic (0 - 521)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	281	1,200
															645	655	655	883	660	880	Stainless steel (641 - 660)	5.56	5.47					Middle Fine-Grained Unit	302	1,179
															883	895	895	1,225	900	1,200	Stainless steel (880 - 900)	5.56	5.47					Lower Basin Fill Unit	385	1,096
																													Bedrock Exclusion Zone	425	1,056
																													Bedrock Oxide Unit	---	---
I-04	55-227966	3/15/2018	3/30/2018	4/19/2018	Class III Injection	D (4-9) 28 CBD	746131.37	847623.89	---	1,482.16	1,225	1,199	0	488	488	505	505	646	520	640	Fiberglass Reinforced Plastic (0 - 520)	5.47	4.74	Schedule 80 PVC	0.080	5.56	4.81	Upper Basin Fill	280	1,202
															646	654	654	882	659	879	Stainless steel (640 - 659)	5.56	5.47					Middle Fine-Grained Unit	300	1,182
															882	894	894	1,225	899	1,199	Stainless steel (879 - 899)	5.56	5.47					Lower Basin Fill Unit	365	1,117
																													Bedrock Exclusion Zone	405	1,077
																													Bedrock Oxide Unit	---	---
WESTBAY WELLS																														
WB-01	55-227226	3/19/2018	3/31/2018	4/10/2018	Class III Multi-Level Sampling	D (4-9) 28 CAC	746167.50	847695.07	---	1,479.34	1,203	1,174	0	474	474	498	498	589	562	572	Fiberglass Reinforced Plastic (0 - 497)	4.5	3.75	Schedule 80 PVC	0.020	4.5	3.83	Upper Basin Fill	282	1,197
															589	663	663	727	702	712	Schedule 80 PVC blank (497-562, 572-702, 712-843, 853-983, 993-1123 1133-1174)	4.5	3.83					Middle Fine-Grained Unit	302	1,177
															727	827	827	858	843	853								Lower Basin Fill Unit	377	1,102
															858	968	968	1,005	983	993								Bedrock Exclusion Zone	417	1,062
															1,005	1,104	1,104	1,203	1,123	1,133								Bedrock Oxide Unit	---	---
WB-02	55-227227	3/17/2018	4/11/2018	4/18/2018	Class III Multi-Level Sampling	D (4-9) 28 CAC	746131.33	847730.23	---	1,478.75	1,204	1,175	0	484	484	500	500	584	563	574	Fiberglass Reinforced Plastic (0 - 498)	4.5	3.75	Schedule 80 PVC	0.020	4.5	3.83	Upper Basin Fill	283	1,196
															584	683	683	710	704	714	Schedule 80 PVC blank (498-563, 574-704, 714-844, 854-984, 994-1124 1134-1175)	4.5	3.83					Middle Fine-Grained Unit	300	1,179
															710	824	824	857	844	854								Lower Basin Fill Unit	385	1,094
															857	968	968	1,005	984	994								Bedrock Exclusion Zone	425	1,054
															1,005	1,114	1,114	1,204	1,124	1,134								Bedrock Oxide Unit	---	---
WB-03	55-227228	2/7/2018	2/24/2018	3/30/2018	Class III Multi-Level Sampling	D (4-9) 28 CAC	746096.50	847694.08	---	1,478.99	1,220	1,174	0	489	489	501	501	582	563	573	Fiberglass Reinforced Plastic (0 - 498)	4.5	3.75	Schedule 80 PVC	0.020	4.5	3.83	Upper Basin Fill	280	1,199
															582	665	665	721	703	713	Schedule 80 PVC blank (498-563, 573-703, 713-843, 853-984, 994-1124 1134-1174)	4.5	3.83					Middle Fine-Grained Unit	300	1,179
															721	823	823	864	843	853								Lower Basin Fill Unit	385	1,094
															864	953	953	1,010	984	994								Bedrock Exclusion Zone	425	1,054
															1,010	1,088	1,088	1,220	1,124	1,134								Bedrock Oxide Unit	---	---
WB-04	55-227229	2/5/2018	2/25/2018	4/5/2018	Class III Multi-Level Sampling	D (4-9) 28 CAC	746131.41	847659.81	---	1,479.79	1,219	1,175	0	486	486	498	498	594	564	574	Fiberglass Reinforced Plastic (0 - 498)	4.5	3.75	Schedule 80 PVC	0.020	4.5	3.83	Upper Basin Fill	280	1,200
															594	689	689	730	704	714	Schedule 80 PVC blank (498-564, 574-704, 714-844, 854-984, 995 - 1125, 1135-1175)	4.5	3.83					Middle Fine-Grained Unit	300	1,180
															730	829	829	869	844	854								Lower Basin Fill Unit	375	1,105
															869	967	967	1,010	984	995								Bedrock Exclusion Zone	415	1,065
															1,010	1,109	1,109	1,219	1,125	1,135								Bedrock Oxide Unit	---	---

NOTES:

1. Information taken from the pipe tally, annular materials and well development field forms; the automated casing layout; and the drill tracking spreadsheet for each well.
ft. amsl = feet above mean sea level
ft. bgs = feet below ground surface
in. = inches
NAD83 = North American Datum 1983
NAVD88 = North American Vertical Datum of 1988
POC = Point of Compliance Well
PVC = polyvinyl chloride

TABLE 4
WATER LEVEL ELEVATIONS DOWNGRADIENT
OF THE PTF WELLFIELD
FLORENCE COPPER INC.
FLORENCE, ARIZONA

Well ID	Well Type	Location	Distance from Wellfield (feet)	Water Level Elevation 8/30/2018 (feet amsl)	Calculated Gradient between MW and Wellfield (feet/foot)
O-07	PTF Observation	Downgradient edge of wellfield	0	1235.98	NA
O-06	PTF Observation	Downgradient edge of wellfield	0	1235.57	NA
MW-01-O	Operational Monitoring	Downgradient of wellfield	145	1236.20	0.004
M54-O	Point-of-Compliance Well	Downgradient of wellfield at PMA boundary	500	1238.27	0.005

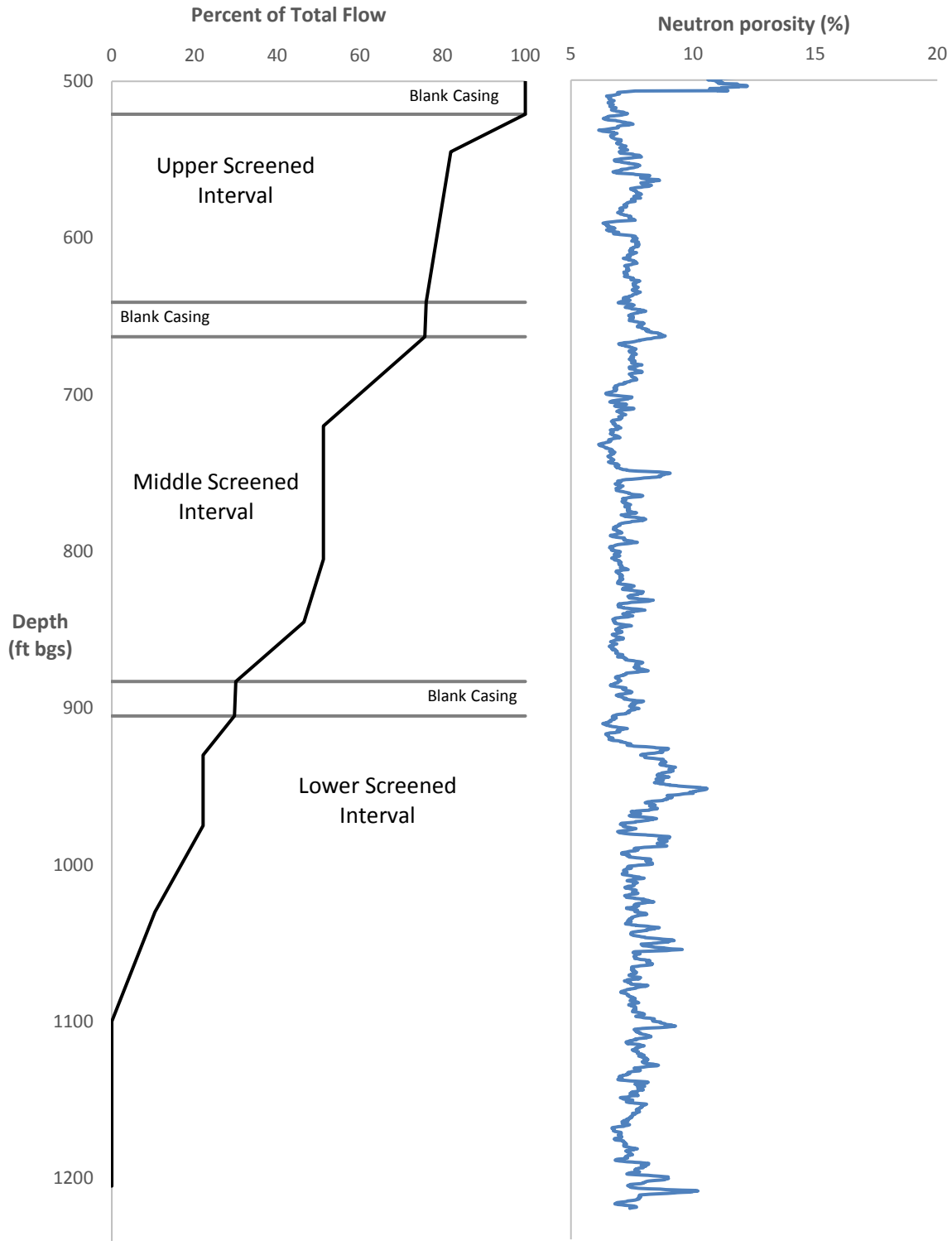
Notes:

amsl - above mean sea level

NA - not applicable

PTF - Production Test Facility

FIGURES



NOTES

bgs = below ground surface

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

R-01 SPINNER FLOW AND POROSITY PROFILES

SEPTEMBER 2018

FIGURE 1

G:\Projects\Florence Copper\129687 PTF Well Drilling\Deliverables\Pre-Operational Report\[Figure 1_R-01_Spinner Flow Porosity Profiling.xlsx]Figure

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Florence Copper\129687 PTF Well Drilling\GIS\MXD\2018_09\129473_011_0002_HYDRAULIC_CONTROL_POTENTIOMETRIC_SURFACE_0830.mxd
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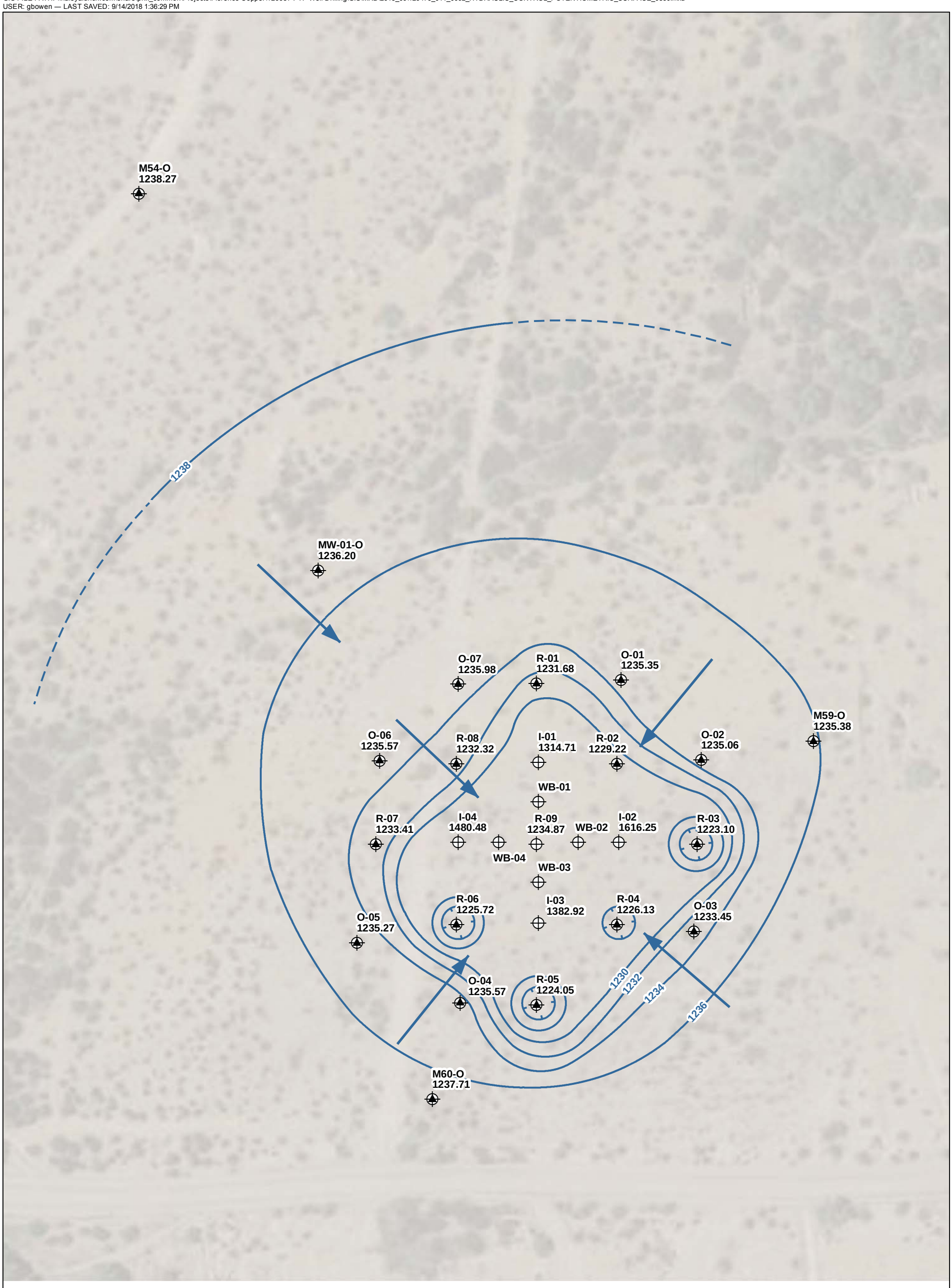

LEGEND

- WELL USED FOR CONTOURING
- WELL NOT USED FOR CONTOURING
- POTENTIOMETRIC SURFACE CONTOUR, 2-FT INTERVAL (DASHED WHERE INFERRED)
- POTENTIOMETRIC SURFACE FLOW DIRECTION

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. RECOVERY WELLLS ARE PUMPING.
3. INJECTION WELLS ARE INJECTING CLEAN WATER.
4. AERIAL IMAGERY SOURCE: ESRI

N

0 80 160
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

HYDRAULIC CONTROL POTENTIOMETRIC SURFACE MAP 30 AUGUST 2018

FLORENCE COPPER INC.

SEPTEMBER 2018

FIGURE 2